SCIENCE & GOVERNMENT REPORT

21st Year of Publication
The Independent Bulletin of Science Policy

Volume XXI, No. 12 | P. O. Box 6226A, Washington, D. C. 20015 | © July 1, 1991

Inspector General Probing Contract Allegations

NSF Wonders Whether It's Got a Scandal Brewing

The biggest internal investigation ever undertaken at the National Science Foundation is currently under way following allegations of contract irregularities and mismanagement in NSF's Division of Science Resources Studies.

SRS, the national scorekeeper for R&D and related statistics, has long been a problem at NSF. Widely criticized for the quality and timeliness of its work, it will soon have its fifth Director within 16 months. Internal acrimony has been plentiful among its staff, which currently numbers about 50. But in recent months, the Division's already poisonous atmosphere has been intensified by charges of conflicts of interest and "wired" contracts with at least one outside consulting firm.

In office only since March 4, NSF Director Walter Massey turned the NSF Inspector General (IG) loose on the Division at the end of May after learning that warring SRS staff members had taken complaints to a Congressional committee, the Department of Justice, and the Office of Government Ethics. Since then, six investigators from the IG's staff have been probing SRS fulltime, and plan to be at it through July. Particular attention is being paid to sole-source contracts and relations between one SRS employe and a contractor firm.

Bloch Raps SSC Priority—P. 3

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SGR hears that just prior to ordering the probe, Massey angrily told a senior staff meeting that he doesn't intend to end up like Stanford President Donald Kennedy—ridiculed as "incompetent or a fool" at a Congressional hearing on Stanford's indirect-cost practices. In change-of-command discussions last spring between Massey and outgoing NSF Director Erich Bloch, the troubles at SRS are said to have been a prominent item.

SRS is more an appendage of NSF than an integral part. Organizationally, it is within the Foundation's catchall department, the Directorate for Scientific, Technological, and International Affairs. The STIA Directorate is a melange of functions outside the main NSF structure, which consists of disciplinary directorates.

SRS is even geographically separate from NSF, occupying a suite of offices about six blocks from the NSF headquarters building in downtown Washington. Most of NSF is concerned with dishing out grants to academe. SRS works inhouse on its reports and also contracts for services from outside firms.

SRS receives only a sliver of the Foundation's current annual budget of $2.3 billion—about $6 million, of which half is paid to consulting firms under SRS contracts. But as the federal government's major compiler and interpreter of R&D statistics, SRS is the basic source of statistical reports on budgets, manpower, and other key elements of the national R&D enterprise. The Division produces scores of publications, among them *Science and Engineering Indicators*, *National Patterns of R&D Resources*, and several long-

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In Brief

Stanford University is paying heavily for fiddling with indirect costs on federal research grants. With its provisional indirect-cost rate cut from 78 to 55.5 percent, retroactive to last September, Stanford Medical School, citing the reduction, says it is projecting a $77.7 million deficit from 1991-96. Operating expenses for academic and administrative units have been reduced by about 7 percent, according to an announcement, and other retrenchments are under review.

The hearing on the so-called Baltimore case scheduled for June 26 by Rep. John Dingell was called off after the NIH Office of Scientific Integrity said it needed more time to prepare its final report. New date not set.

Other developments in the case: Margot O'Toole, the "whistle-blower" in the long-running controversy, was scheduled to confer last week with the US Attorney in Boston, who is reportedly examining the record for criminal violations. And several of Harvard's most eminent life scientists, collectively appalled by Nobel Laureate David Baltimore's original performance and his renewed attack on O'Toole [*Nature*, May 30], have been conferring among themselves about a collective response.

What's the thinking of Rep. Bob Traxler, the Appropriations Subcommittee Chairman from Michigan who nearly scuttled the Space Station? SGR hears that Traxler, besides thinking it's wasted money, feels the Station and other big space projects are, in effect, "earmarked" appropriations for California, Texas, and Florida—not coincidentally a whopping bloc of presidential electoral votes and the leading recipients of NASA awards.

. . . Academy Study Critical of NSF Manpower Data

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running series on scientific and engineering manpower.

On the scale of Washington misdeeds, the troubles at SRS are, at worst, relatively small. But for the fledgling Massey regime and NSF, which has survived 40 years without a gory scandal, the SRS affair is serious business. Science's halo has recently been tarnished by the indirect-cost scandals, the Baltimore case, and several other embarrassments for the community.

In the early days of a six-year appointment, Massey can write off SRS's problems as an unwelcome inheritance, but grace periods for new chieftains are not unlimited.

Apart from the interest in rooting out a potentially great embarrassment, there's also the urgent matter of upgrading the professional performance of the Division of Science Resources Studies.

In April 1989, a report by the National Academy of Sciences, *Surveying the Nation's Scientists and Engineers: A Data System for the 1990s*, strongly criticized the Division's output as "ambiguous, subject to misinterpretation by users, and very difficult to relate to estimates produced by other data systems."

The report noted that SRS had suffered serious budget reductions under the Reagan regime and that some of the data it had to rely upon were actually collected by other agencies. But the overall grade for SRS was poor. The report was warmly received by the man who had ordered it, William Stewart, head of SRS since 1985.

One year after the critical report was issued, Stewart retired. Director Bloch then called in the head of the STIA Directorate, F. Karl Willenbrock, and told him to hire a Director who would shape up the Division. The job went to Daniel Melnick, a government-affairs specialist who was brought in from the Congressional Research Service (CRS), part of the Library of Congress. Melnick went to work at SRS in March 1990. Six months later, he was reassigned to another job in STIA.

The word around SRS is that he had a good command of the substance of SRS's responsibilities, but that he wasn't a manager.

Next came another CRS specialist in government, William Ellis, who was already at the Foundation on a one-year assignment. Ellis became Acting Director of SRS in January of this year and, upon becoming familiar with the Division's operations and problems, resigned at the end of May to return to CRS.

It is known that at one point, he met with Massey and other senior officials of the Foundation and expressed his concerns about internal matters at SRS. But, according to sources at NSF, that session did not produce any discernable impact.

When Ellis announced his departure, Willenbrock then made it known that he would appoint Gerard Glaser, STIA's Executive Officer, to fill the position. A delegation of SRS staff members promptly hurried to Massey's office to protest Glaser's appointment and to warn the NSF Director that they would not work with Glaser.

The basis for this animosity ranged over various matters, including personnel and bonus decisions. But whatever its validity, it was so intense that Massey vetoed Glaser's appointment and, instead, designated his Senior Science Adviser, James F. Hays, to take the job on an acting basis.

Shortly afterwards, investigators from the NSF Office of Inspector General took custody of various files at SRS and in the NSF Division of Grants and Contracts, which must approve all contract awards. The IG investigation is expected to continue through July; a report is scheduled to be delivered to Massey in September.

On June 19th, as the investigation proceeded, Willenbrock sent the SRS staff a memo announcing the selection of a new Director for the Division: Kenneth Brown, a senior economist at the National Intelligence Council since 1987. Prior to that, he served for six years in the Department of Commerce as Deputy Director of the Bureau of Industrial Economics. A PhD in economics from Johns Hopkins, the incoming chief of SRS has also worked for the Congressional Joint Economic Committee and the General Accounting Office.

Willenbrock's memo stated that Director Massey and Deputy Director Frederick M. Bernthal "strongly endorsed and approved of my recommendation of Dr. Brown for this position." Brown is scheduled to start work on July 8.

Meanwhile, the NSF staff has been counting the days to July 4, at which time Massey will compete his 120th day as Director of NSF, thus ending the so-called hiatus period in which a newly appointed agency chief may not dismiss any of the most senior staff members, those in the Senior Executive Service.

The expectation at the Foundation is that at least one SES head will roll.—DSG

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Independently published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, $325.00 (two years, $555.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. ISSN 0048-9581.

Former NSF Head Says SSC Should Be Delayed

Free of the federal establishment since last August, Erich Bloch has been letting loose on a variety of issues that he either discreetly sidestepped or softpedaled during his six years as Director of the National Science Foundation.

Bloch was in good form on June 20, when he testified at a House hearing on "The Role of Basic Research in Economic Competitiveness." The subject is wearing thin from overexposure in Congressional hearing rooms. But Bloch, testifying as a Distinguished Fellow of the Council on Competitiveness, regularly spiced the proceedings with observations and opinions that would have been heretical in his government role.

In his prepared statement for the hearing, held by the Science Subcommittee of the Science, Space, and Technology Committee, Bloch warned against investing in "prestige projects" while neglecting "basic infrastructure" and education. Research support, he suggested, should be ranked in terms of value for "enhancing basic research and its infrastructure," "economic competitiveness," and "government mission and US prestige." Rep. Sherwin Boehlert (R-NY), an around-the-clock antagonist of the Superconducting Super Collider, asked Bloch whether he would consign the SSC to the third category.

"This is a very general statement which certainly applies to the SSC, very clearly," Bloch replied.

Boehlert, who has exposed many misrepresentations in the campaign to sell the SSC to Congress, asked whether the SSC ranked low in Bloch's priorities for federal R&D spending.

"Absolutely," Bloch replied. Visibly pleased by the response, Boehlert then said, "I find it mind-boggling to look in the budget and see a 120 percent increase for the SSC and in other areas they go begging. Are we right to give such a high priority to a so-called prestige project like the SSC?"

"No, I don't think so," Bloch said, adding, "By the way, I think the SSC is an important kind of an instrument. There's no doubt about it. But if we can't afford it in 1991 or in 1992 or in 1993, let it wait. That would be my approach. We have more important things to fund within the R&D budget—people, instrumentation, facilities, economic competitiveness, related projects. And to me, those are all more important. They are the basis on which one can afford later on to build something like the SSC. A rich country can afford it. We're not as rich anymore as we were at one time."

Continuing on the SSC, Bloch said, "Especially on a project like that, which is highly visible, which serves a very small community . . . it would be very important from the beginning, from the start, to make sure that there is international cooperation, that we are not the only one that is putting its money into—"

Boehlert interrupted his duet partner: "You say, 'From the beginning'?"

"From the beginning," Bloch repeated. "It can't be done afterwards."

"Do you know where we are right now?" Boehlert asked, referring to the Department of Energy's long and fruitless search for foreign assistance for SSC.

"Yes, I know where we are right now," Bloch said, as Boehlert noted that so far, the sole foreign contribution to the SSC is a reported $50 million in engineering services from India. The US, however, is paying the expenses for a small team of Indian engineers serving with the SSC project.

"We haven't received the first penny, and we're actually paying," Boehlert said with exasperation.

Bloch responded: "You see, you have to set the ground rules for that one from the start. You have to make the agreements from the beginning. You have to let the chips fall where they may. Maybe the SSC should not be built in the US," Bloch said, raising a politically sensitive issue that would be strictly out of bounds if he were still in government service.

"Maybe it should be built somewhere else," he said. "These are discussions that one has to have before the fact. So, I think international cooperation in both the scientific sense and the financial sense are very important for these big projects. We no longer can afford them ourselves. They have to take a secondary kind of priority over things which are more important."

Bloch's opinion was seconded by a fellow witness, Peter Likins, President of Lehigh University. If the evaluation process is confined to scientific criteria, the SSC ranks high, Likins said. But, he continued, there are other ways of looking at science priorities. Different conclusions arise "if you start off by saying, what if we had a fixed body of money that we were going to spend over a decade's time on scientific research in America? What are the relevant priorities? And what are the funds that you simply must commit to the continuing education of scientists and to the greatly dispersed research enterprise of this country?"

When priorities are approached that way, Likins continued, "then I personally, speaking only for myself, am drawn to the conclusion that we're making a disproportionate allocation of funds toward the Super Collider."

* * *

As sprightly as the Bloch and Likins observations may be, evidence is sparse that they can actually influence Congressional decisionmaking. The SSC rolls on, thriving on strong Presidential support and shrewd distribution of contracts throughout the country. The optimistic SSC cost estimates dished up by the Department of Energy have repeatedly been exposed as phony by Boehlert and his anti-SSC allies. And, despite DOE's repeated assurances that foreign financial assistance is on the way, Japan and Europe—the only possible sources of substantial funds—are cool to the SSC and have made no commitments.

Europe has quietly but clearly signalled that it's burdened with its own high-energy physics program at CERN,

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. . . But Few Are Listening at Congressional Hearings

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and cannot afford to help the American project. Japan cleverly keeps open the possibility of buying into the SSC, thus acquiring leverage in other dealings with the US, but always putting off the SSC decision.

The hearing rooms of Congress resound with sensible critiques of science-policy affairs. The question is: Do they make a difference? In an osmotic fashion, dissent from the status quo sometimes seeps into policy. And, now and then, Congress attempts to force change upon the White House, as it did in 1988 when it rechristened the venerable National Bureau of Standards as the National Institute of Standards and Technology, and tried to make the new creation the centerpiece of federal stimulation for high-tech civilian industry. Reagan simply ignored the legislation and Bush is only now coming around to supporting it, but still at a cautious pace and with little clarity about the division of federal and industrial responsibilities.

Sometimes change comes swiftly in response to Congressional agitation. Following Congressional criticism, the National Institutes of Health, for example, swiftly agreed that more women should be included in clinical trials. One step ahead of Congress, NIH set up an Office of Research on Women's Health. Women's health now ranks high in NIH priorities. But before it became an object of agitation on Capitol Hill, the subject was dismissed by NIH management as misunderstood by uninformed laymen.

The lesson is that a great deal of both politicking and reasoning are the ingredients of change in science-policy affairs. Persuasive witnesses at hearings are part of the process. But the pace of activity—as distinguished from work—on Capitol Hill has become so frantic that the words uttered by carefully prepared witnesses are actually heard by few Members of Congress.

Congressional time is split among multiple committee assignments, floor sessions and votes, a variety of lobbying caucuses, and constituent duties. Members commonly hurry in and out of hearings, apologizing that they're due at another committee hearing. Hearings on hot topics regularly draw TV coverage and high attendance by committee members hoping that a lucky "sound bite" will put them on the network evening news.

But on obscure issues such as "The Role of Basic Research in Economic Competitiveness," attendance is inevitably low. The Subcommittee Chairman, Rep. Rick Boucher (D-Va.), sat through the proceedings, with time out to go to the floor for a vote. Other members came and went.

A stranger to such proceedings might justly wonder what's the purpose of summoning specialists to discuss complex problems if the intended audience is sparse, distracted, and often not there? The standard answer is, that's how the system works.

But the reality is that, with occasional exceptions, it works poorly.—DSG

Focus on Industrial R&D Urged by Lehigh President

From a written statement by Peter Likins, President of Lehigh University, presented June 20 to the Science Subcommittee of the House Committee on Science, Space, and Technology. Likins, former Dean of Engineering and Provost at Columbia University, is a member of President Bush's Council of Advisers on Science and Technology, and ranks high in Washington science-policy circles as an innovator in developing ties between academe and industry.

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It has become customary to classify research spending in the United States as either *basic* or *applied*. We also differentiate between *defense* research and *nondefense* research. These distinctions have proven to be useful in the past, but it may be more important in the future to distinguish between research that is targeted in fields with strong economic potential and research that is not economically targeted. . . .

In comparison with other nations of the world, the *proportion* of research in the United States that is *economically targeted* must be remarkably small, but the data are not presented in a revealing way. In comparison with Japan and Germany . . . the data would tell a compelling tale of woe. Among the many reasons for the comparative decline of the United States as an economic power, certainly one reason is our research investment policy.

For almost 40 years after World War II, we operated with a de facto industrial policy that separated the affairs of government and commercial industry as rigorously as those of church and state, and increasingly drew universities into the orbit of government. We developed a research capability in American universities without precedent in world history, and financed academic research in the non-commercial fields of defense, space and health, or in any field that stimulated the imagination of a fine professor. . . .

But for decades, most American professors and their students had few incentives to work in fields of interest to commercial industry; there seemed to be an unstated ban on federal sponsorship of economically targeted research, which was treated as the exclusive domain of industry. . . .

In my opinion, . . . recent initiatives in the federal government are well conceived, and I've seen the right kinds of benefits in the form of research results and educational experiences. Perhaps the next generation of engineers will understand the importance of economic value in their work.

Women's Health Research Big Gainer in NIH Budget

Research programs related to women's health are coming on strong and fast as the new Congressional favorite in Capitol Hill's traditional role as guardian and supporter of the National Institutes of Health.

That's what stands out in the report of the NIH's House Appropriations Subcommittee, issued June 20, and, as always, scrutinized by the Washington biomedical-policy community as a holy text in NIH relations with the Congress.

The Subcommittee, dominated by its venerable Chairman, William H. Natcher (D-Ky.), was this year spared from the customary ploy of the White House requesting little or no increase for NIH in anticipation of Congress pouring it on. Instead, the President asked for $548 million above the current budget, and Natcher's subcommittee added a mere $50 million to the proposed increase, bringing the total for fiscal 1992 to $8.8 billion. The increase works out to 6.6 percent, respectable in present budget circumstances.

Natcher's report noted that in shaping the NIH budget, "the highest priority was given to women's health issues, which received more than one-third of the increases provided in the bill. This includes funding for breast and ovarian cancer, a new long-term clinical trial on women's health and specific additions for the Office of Women's Health Research to initiate or expand research into areas where women are particularly vulnerable."

The report is noteworthy for its absence of effusive commentary and accompanying wealth for the most ballyhooed promotion now going in biomedical affairs, the Decade of the Brain, neurology's quest to emulate the early budget successes of the War on Cancer.

The champion of that campaign, Rep. Silvio O. Conte (R-Mass.), died last year, and no one has stepped into his place.

The budget for the homebase for the Decade of the Brain, the National Institute of Neurological Disorders and Stroke, was increased as the President requested, from $541 million to $583 million, far short of the torrid growth pace proposed by the campaign's strategists and promoters.

The report described the Committee as "greatly disturbed" by the recent indirect-cost scandals, adding that it was "concerned that these may be merely the superficial signs of a systemic problem in which Federal grantees may have routinely cost-shifted non-research related expenses by claiming them under their indirect-cost rates."

IEEE Calls for Scaled-Down Version of the Space Station

Still facing the Senate after a brush with oblivion in the House, Space Station Freedom has come under fire from an engineering society whose dissent invites attention, the 250,000-member Institute of Electrical and Electronics Engineers.

The IEEE's qualms alone are not likely to sway the Senate, but they highlight the growing opposition to a technically senseless project that has so far survived on its potential for pork-barrel riches and zero-gravity theatrics.

Cost estimates for the space station exist in a hallucinatory haze that has ranged since 1984 from $8 billion to $40 billion, but the figure currently rated as official is $30 billion.

In the House, a far from triumphant 240-173 vote on June 6 salvaged the space station from a total wipeout by the Appropriations Committee, which said the $2 billion sought for next year by the Administration could be better used for other purposes [SGR, June 15: "How They Salvaged the Space Station on Capitol Hill"]. The final deal provided $1.9 billion for the space station, at the price of freezing the budget levels for NASA science programs and virtually all other activities in the space agency.

With determination of the space station's fate shifted to the Senate, the IEEE issued a statement on June 7 declaring its opposition to the $30 billion version and calling instead for a no-frills $10 billion model. Urging concentration on the biomedical effects of weightlessness, the IEEE statement said, "A larger expenditure would seriously detract from other important civilian space programs, such as satellite communications and remote sensing, and require diversion of public funds needed for other purposes."

On June 25, the IEEE was at it again, calling a press conference to reiterate its opposition to the $30 billion House version in a statement by Arvid G. Larson, Chairman of the IEEE Technology Council and also Vice Chairman of the organization's US Activities Board. The statement repeated the earlier arguments against the grand model of the space station, but also disputed the contention that the project "will make important contributions to US competitiveness through spinoffs of new commercial technology."

"We believe," Larson said, "that funding of Space Station Freedom will require deep and sustained cuts to other NASA programs with much greater significance for US competitiveness and the quality of life on earth."

The first act in the Senate version of the drama will be played out by the Appropriations Subcommittee for VA, HUD, and Independent Offices, chaired by Barbara Mikulski (D-Md.). After the markup of the bill, which has not yet been scheduled, the full Committee will have a crack at it and then it goes to the floor. The odds are that Space Station Freedom will survive in the Senate, but at what level is far from clear. Few are happy with the House formula for crimping the rest of NASA to save the station.

Bush Presides at Swearing In of NIH Director

President Bush made a gracious political bow to the biomedical community last week by attending the official swearing in of Bernadine Healy as Director of the National Institutes of Health at a jam-packed ceremony on the NIH Bethesda campus.

Anyone who ascribes anything political to the Presidential presence should be required to write "fetal-tissue ban" 100 times.

Healy actually took office in April at an unceremonial swearing in, but when top jobs are involved, it is not unusual to put on a bit of show at a convenient later date. In this case, it was a full-dress performance, including the Marine Band. Mrs. Bush attended the ceremony, which is interpreted as a sign of special Presidential interest.

In attendance were the top brass of the Department of Health and Human Services, Presidential Science Adviser D. Allan Bromley, assorted luminaries of the Washington biomedical scene, and Healy's husband and two children.

Bush lavished praise on many present, starting with HHS Secretary Louis Sullivan, whom he credited with "doing a first-class job"—an appraisal that would find few supporters in the audience, were true sentiments to be voiced. Sullivan announced that Healy would be the first beneficiary of a new pay scale designed to attract senior biomedical specialists to federal service.

The President inspirationally referred to NIH as "a national treasure," and declared "this building is full of heroes."

The President noted that the three institutes of the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) would be added to the present 13 institutes in the NIH. The move, inspired by ADAMHA's traditional tensions between biomedical research and health-services delivery, still requires Congressional approval, but no hitches are foreseen at this point.

Responding to the great praise lavished on her by the President and other speakers, Healy vowed an unrelenting war on disease. She told of encountering a seriously ill breast cancer patient who implored her to "hurry" to find a cure. Healy told the audience she was committed to that task.

After the ceremony was over, Bush stayed on for several minutes, chatting with members of the audience, shaking hands, and waving hellos.

According to the NIH record keepers, Bush, with three Presidential visits so far to NIH, is far ahead of his recent predecessors. Reagan and Ford are recorded for one visit each, while Carter never made it once to NIH during his four years in office.

Presidential visits, or the lack therof, are taken seriously in the federal establishment. Twenty minutes up the road from NIH is the National Institute of Standards and Technology, which, one soon learns, Mr. Bush has never visited.

Job Changes & Appointments

Kenneth Olden, Director of the Howard University Cancer Center, has been appointed Director of the National Institute of Environmental Health Sciences, part of the National Institutes of Health. He succeeds ***David P. Rall***, who retired last year.

John Holmfeld, one of Capitol Hill's most seasoned veterans in science-policy affairs, has retired from the staff of the House Science, Space, and Technology Committee, and plans to write and teach.

William Happer Jr., Professor of Physics at Princeton University and an old hand in Washington advisory circles, has been nominated by the President for the long-vacant post of Director of Energy Research in the Department of Energy. The position has been filled on an acting basis by ***James Decker*** since ***Robert Hunter's*** departure in 1989. Also at DOE: ***Joe R. Cipriano*** has been appointed Associate Director of Energy Research for the Superconducting Super Collider. He became SSC Project Director last May and will retain that post.

An appointment long reported in the works became official last week when the President announced that he would nominate ***Diane S. Ravitch***, of Columbia University, to be Assistant Secretary for Educational Research and Improvement in the Department of Education.

Alastair McCrae Connell, Vice Chancellor for Health Science at East Carolina University, has been appointed to the newly created position of Assistant Inspector General for Healthcare Inspections in the Department of Veterans Affairs.

William S. Rodney, head of the Nuclear Physics Program at the National Science Foundation from 1963 to 1986, has been appointed Education Program Manager at the Optical Society of America.

Carol Scheman, Vice President of the Association of American Universities, is reported to be the choice for Deputy Commissioner for External Affairs at the Food and Drug Administration. The post encompasses press and consumer relations, legislative affairs, and publications.

Michel Aubry will complete a three-year assignment August 30 as Science and Technology Counselor at the French Embassy in Washington. His successor, due to arrive in October, is ***Claude Wolff***, Director of the Laboratory of Textile Physics and Mechanics, University de Haute Alsace, Mulhouse, France.

Gus Speth, President of the World Resources Institute since its founding in 1982, has announced that he will resign from the Washington-based policy-research center in the summer of 1992.

More In Print: Weapons Sales, NASA Manpower, Etc.

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8; 180 pp., $9), says US arms manufacturers and the Pentagon are creating "a dangerously armed world" by pushing foreign arms sales to sustain the US weapons industry in a period of declining defense budgets. Stressing that the trade can be curbed only under international agreements, OTA lists various options for US policymakers. They include creation of a blue-ribbon Presidential commission to develop a weapons-control strategy and more intensive Congressional oversight on arms dealings. Other recent OTA reports in this subject area:

Arming Our Allies: Cooperation and Competition in Defense Technology (GPO Stock No. 052-003-01189-1; 124 pp., $5);

Holding the Edge: Maintaining the Defense Technology Base (GPO Stock No. 052-003-01150-6; 200 pp., $9);

Adjusting to a New Security Environment: The Defense Technology and Industrial Base Challenge (GPO Stock No. 052-003-01225-1; 16 pp., $1.50).

Order OTA publications from: USGPO, Superintendent of Documents, Washington, DC 20402-9325; tel. 202/783-3238. (Also available from GPO regional offices). Add 25 percent for international orders.

Ending the Production of Fissile Materials for Weapons, Verifying the Dismantlement of Warheads: The Technical Basis for Action (58 pp., $5), a joint report by the Federation of American Scientists and collaborating groups from the Soviet Academy of Sciences and the Kurchatov Institute of Atomic Energy. Says nuclear-weapons materials should be brought under safeguards similar to those applied to civilian nuclear programs by the International Atomic Energy Agency.

For verified reduction of warhead stockpiles, the report recommends shifts of agreed-on quantities of warheads and nuclear materials to "safeguarded nonweapon use or disposal." It also suggests that the US and Soviet Union declare the size of their fissile stockpiles and cooperate in research to confirm production records.

Order from: Federation of American Scientists, 307 Massachusetts Ave. NE, Washington, DC 20002; tel. 202/546-3300.

NASA Personnel: Shortages of Scientists and Engineers Due to Retirements Unlikely in the 1990s (GAO/NSIAD-91-185; 28 pp., no charge), by the General Accounting Office (GAO), Congress's investigative service, says events have revealed no basis for NASA's panicky 1989 warnings that it would soon be crippled by an exodus of retirees from its senior technical ranks. "The probability is low," the GAO states, "that a large number of scientists and engineers will leave NASA over a short period of time and create a serious gap of experienced personnel." Annual attrition rates as a percentage of total employment in these job categories were 5.4 percent in fiscal 1989 and 4.9 percent in 1990, the reports says. It adds that a survey of retirement intentions found that they remain steady at 20-22 percent of those eligible each year.

The GAO concludes: "Employment levels at NASA have historically been influenced more by agency cutbacks, program restructuring, and external factors than by eligibility for voluntary retirement." The report was requested by Senator Barbara Mikulski (D-Md.), who chairs NASA's Appropriations Subcommittee.

Also from GAO: ***Hazardous Waste: Limited Progress in Closing and Cleaning Up Contaminated Facilities*** (GAO/RCED-91-79; 46 pp., no charge), reports only "limited progress" by the Environmental Protection Agency in assuring prescribed closure and monitoring of hazardous-waste facilities that are inactive or scheduled to discontinue operation. As of last February, the GAO states, only 337 of 1128 "closing land disposal facilities had actually closed" and only 105 had received "post-closure" permits. GAO notes, though, that EPA now has a new strategy that is intended to "yield the greatest environmental results. This approach can help address the problems GAO identified," the report says, "but its implementation needs to be closely monitored."

Order GAO reports from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

SGR Summer Schedule

The next issue of *Science & Government Report* will be published August 1, 1991.

In Print: Genetic Resources, Health Legislation, Etc.

The publications listed are obtainable as indicated—not from SGR.

Managing Global Genetic Resources: Forest Trees (228 pp., $24.95, plus $3 shipping), from the National Academy of Sciences, a gloomy assessment of the state and future of the world's forests, which the report says are "declining at an unprecedented rate." This volume, second in an NAS series of studies on global genetic resources, was prepared by a group chaired by Gene Namkoong, of the US Forest Service and the North Carolina State University Genetics Department. Among the recommendations: A major expansion of the number of species included in programs on forest tree resources and broadening of international collaboration, including creation or designation of an "international institution" to lead and coordinate the field.

Previously published in the series: ***Managing Global Genetic Resources: The US National Plant Germplasm System*** (171 pp., $19.95). In preparation are reports on livestock, fish and shellfish, and crop plants.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800-624-6242; in Washington metropolitan area: 202/334-3313.

Congress and Health: An Introduction to the Legislative Process and its Key Participants (112 pp.), by the National Health Council, an association of health-related organizations ($20 per copy for non-members, $15 for members of Council organizations), ninth edition of an excellent primer focused on Congressional handling of health legislation, but much of the text also applies to all legislative fields. Included are the basic rules of the budget process, legislative timetables, explanations of committee jurisdictions, and many hard-to-find telephone numbers for tracking events on Capitol Hill.

Order from: National Health Council, 1700 K St. NW, Suite 1005, Washington, DC 20006; tel. 202/785-3913.

Japanese and US Industrial Associations: Their Role in High-Technology Policymaking (91-477 E; 48 pp., no charge), by the Japan Task Force of the Congressional Research Service (CRS), part of the Library of Congress, says steady, cooperative ties exist between Japanese industrial associations and government agencies, whereas in the US, comparable relations are infrequent. One reason, the report suggests, is absence of a clear White House policy on the federal role in boosting industry. Taking a broad definition of "industrial associations," the report says that "There are now over 1400 national, regional, State, and local organizations in the United States representing scientific, engineering and technical interests." It notes the view that state sci-tech programs are "as important as the Federal Government as a major supporter of commercial technology development and regional economic development." Included are lists of major Japanese and American industrial associations, numbers of members, and budgets. The report was prepared by Dick K. Nanto, CRS Economics Division, and Glenn J. McLoughlin, CRS Science Policy Research Division.

Order from: Science Policy Research Division, Congressional Research Service, Library of Congress, Madison Building, Washington, DC 20540; attn. Ms. Raap; tel. 202/707-7014.

Science and Technology in the United Kingdom (312 pp., $162), expensive, but worthy of attention, since the US frequently tags after the UK in patterns of decline. Consisting of 13 chapters by various specialists, the volume ranges over the UK's major government and industrial research sectors, discussing history, budgets, policy shifts, international collaboration, etc. Included is a directory of important research organizations and a list that shows this is the 14th volume in the Longman Guide to World Science and Technology, which now covers most of the industrialized and major developing nations. The editors of this one are Sir Robin Nicholson, Catherine Cunningham, and Philip Gummett.

Order from: Gale Research, PO Box 71701, Chicago, Ill. 60694-1701; tel. 1-800-877-4253, ext. 1366.

Agricultural Commodities as Industrial Raw Materials (GPO Stock No. 052-003-01237-5; $5), by the Congressional Office of Technology Assessment (OTA), says agriculture could expand beyond present markets for industrial use of commodities, thus helping farmers and depressed rural areas. OTA cautions, however, that research is needed to identify suitable crops, applications, market potential, environmental factors, etc. The report was requested by House and Senate committees as part of a broad study of agricultural issues of the 1990s. Previously published reports from the OTA ag study include:

Agricultural Research and Technology Transfer Policies for the 1990s (GPO Stock No. 052-003-01182-4; 50 pp., $2.50);

US Dairy Industry at a Crossroad: Biotechnology and Policy Choices (GPO Stock No. 052-003-01238-3; 132 pp., $5.50).

Also from OTA:

Global Arms Trade: Commerce in Advanced Military Technology and Weapons (GPO Stock No. 052-003-01244-

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